



AT&L Service-oriented Architecture (SOA) Demonstration Briefing

Presented: DAMIR Conference - October 30 and 31, 2007

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AT&L SOA Demo Briefing Agenda

- ▶ **Introduction - Gary R. Bliss, OSD-ATL/ARA (5 Min)**
- ▶ **AT&L SOA Demo Overview - Gary R. Bliss, OSD-ATL/ARA (20 Min)**
 - AT&L SOA Demo Memorandum
 - What the SOA Demo Is Not About...../ What the SOA Demo Is About.....
 - Data Management Transformation
 - SOA Demo Concept
 - SOA Governance
 - SOA Demo Elements and Framework
 - From Service Point of View
 - SOA Demo Roadmap
 - Definition of Success
 - The Benefit
- ▶ **AT&L SOA Demo Data and Technical Approach - Mark E. Krzysko, OSD-ATL/BT (30 Min)**
 - Surveying the Data - Acquisition Data Framework
 - Documenting Key Elements - Business Enterprise Architecture
 - Using the Data - AT&L SOA Demo
- ▶ **Discussions (15 Min)**



AT&L Service-oriented Architecture (SOA) Demonstration Overview

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AT&L SOA Demo Memorandum

- ▶ Establishes a short-term project (OCT 07 – MAR 08)
 - To demonstrate the utility and applicability (or not) of fundamentally altering the way in which Defense acquisition data is gathered and distributed
 - Uses sixty or so common data elements that are already provided to the DAMIR or Kaleidoscope systems
 - Straightforward approach for pulling MDAP data from Services' source systems
 - Each Service to nominate four MDAPs
- ▶ Being conducted by AT&L(ARA) in coordination with the Acquisition Visibility Business Enterprise Priority (AV BEP) team and BTA
- ▶ Key component of the September 2007 Enterprise Transition Plan (ETP) report to Congress



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OCT 05 2007

MEMORANDUM FOR SERVICE ACQUISITION EXECUTIVES
SERVICE CHIEF INFORMATION OFFICERS
DIRECTOR, BUSINESS TRANSFORMATION AGENCY

SUBJECT: Service-Oriented Architecture (SOA) Demonstration Project

We are initiating a short-term project to demonstrate the utility and applicability (or not) of fundamentally altering the way in which Defense acquisition data is gathered and distributed. It has been evident for some time the business information systems that support decision making in the Defense acquisition community function poorly with regard to supporting aggressive, timely, management action. To fix this problem, we are enhancing several systems, such as the Defense Acquisition Management Information Retrieval (DAMIR) and Kaleidoscope systems, that support the Defense Acquisition Executive Summary and Selected Acquisition Report processes. A fundamental limitation, however, is that these systems rely on the current model of data distribution within the Department of Defense.

SOA, which is becoming widely used in the commercial sector, separates data governance from the tools that use the data. It makes data immediately available to users – irrespective of institutional hierarchy – and facilitates efficient acquisition management decisions. To clarify the utility, obstacles and costs of this approach in the Defense acquisition community, a demonstration project will be initiated immediately, and findings will be reported back to me within 6 months.

This project will be relatively simple: perhaps around 60 common data elements that are already provided to the DAMIR or Kaleidoscope systems and a straightforward approach for pulling Major Defense Acquisition Program (MDAP) data from Services' source systems will be used. Each Service will nominate four MDAPs to be included in the project. This demonstration is a key component of the September 2007 Enterprise Transition Plan report to Congress where its importance and characteristics are discussed in some detail. Mr. Gary Bliss (gary.bliss@osd.mil), AT&L/ARA, will lead this study, with Service and BTA participation. Mr. Bliss's office, with the assistance of BTA staff, has already developed candidate data elements and a technical approach. Each Service is to respond in the next week, listing the four candidate programs and Service points of contact for this study.


John J. Young, Jr.
Acting



What the SOA Demo Is Not About.....

- ▶ Imposing any uniform business process throughout the Defense acquisition community
- ▶ Establishing a Central Data Repository
- ▶ Replacing DAMIR, Kaleidoscope, AIM, Smart,etc, or any other particular software application or tool currently in use within the Department
- ▶ An IT solution or fix to solve a problem

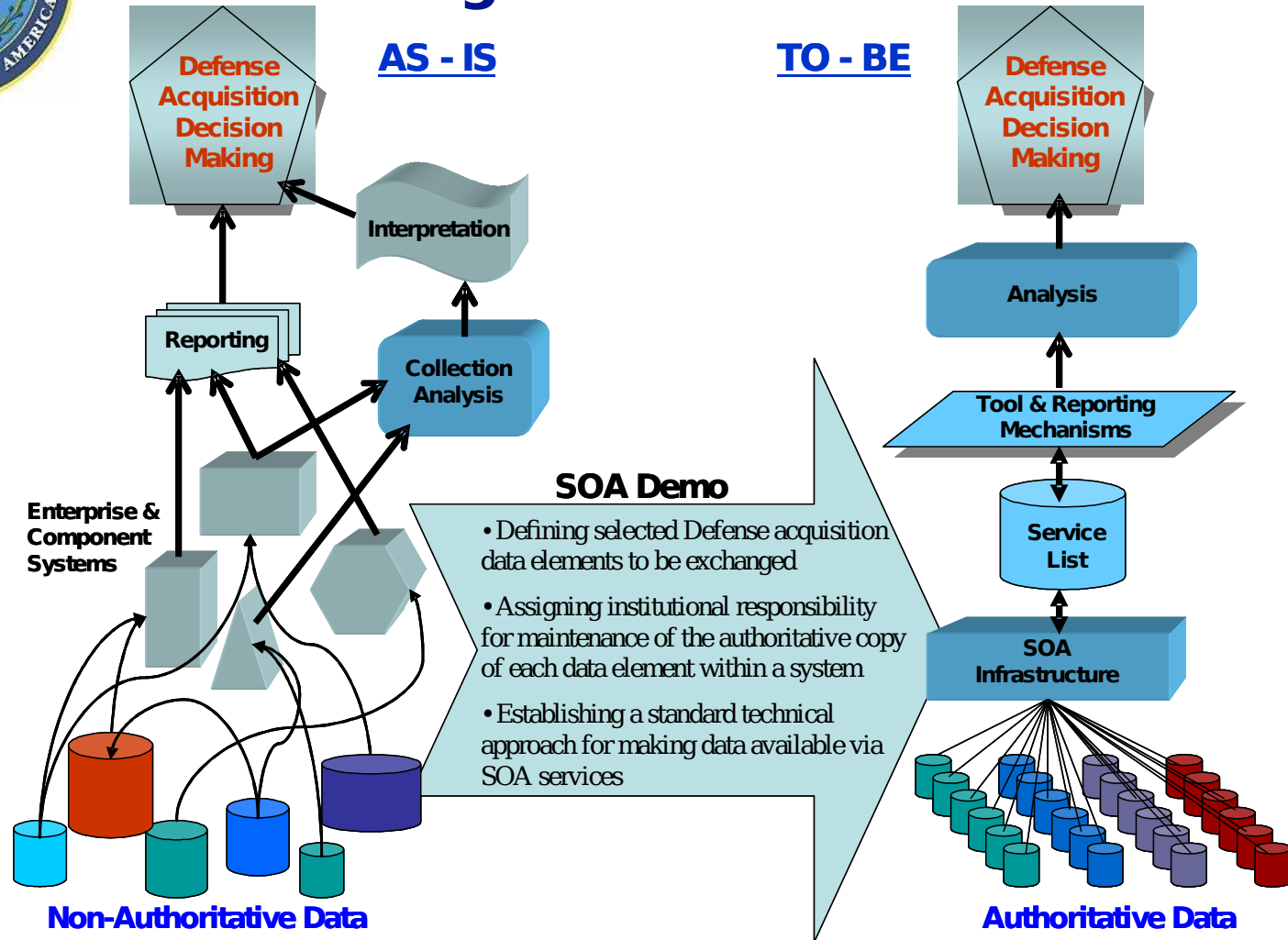


What the SOA Demo Is About.....

- ▶ Getting authoritative data more quickly into our respective management systems so that it may contribute to better, faster decisions
- ▶ Demonstrate the feasibility of managing our acquisition data infrastructure separately from our systems or tools
- ▶ Feasibility of establishing a formal data governance institution within the Defense acquisition community



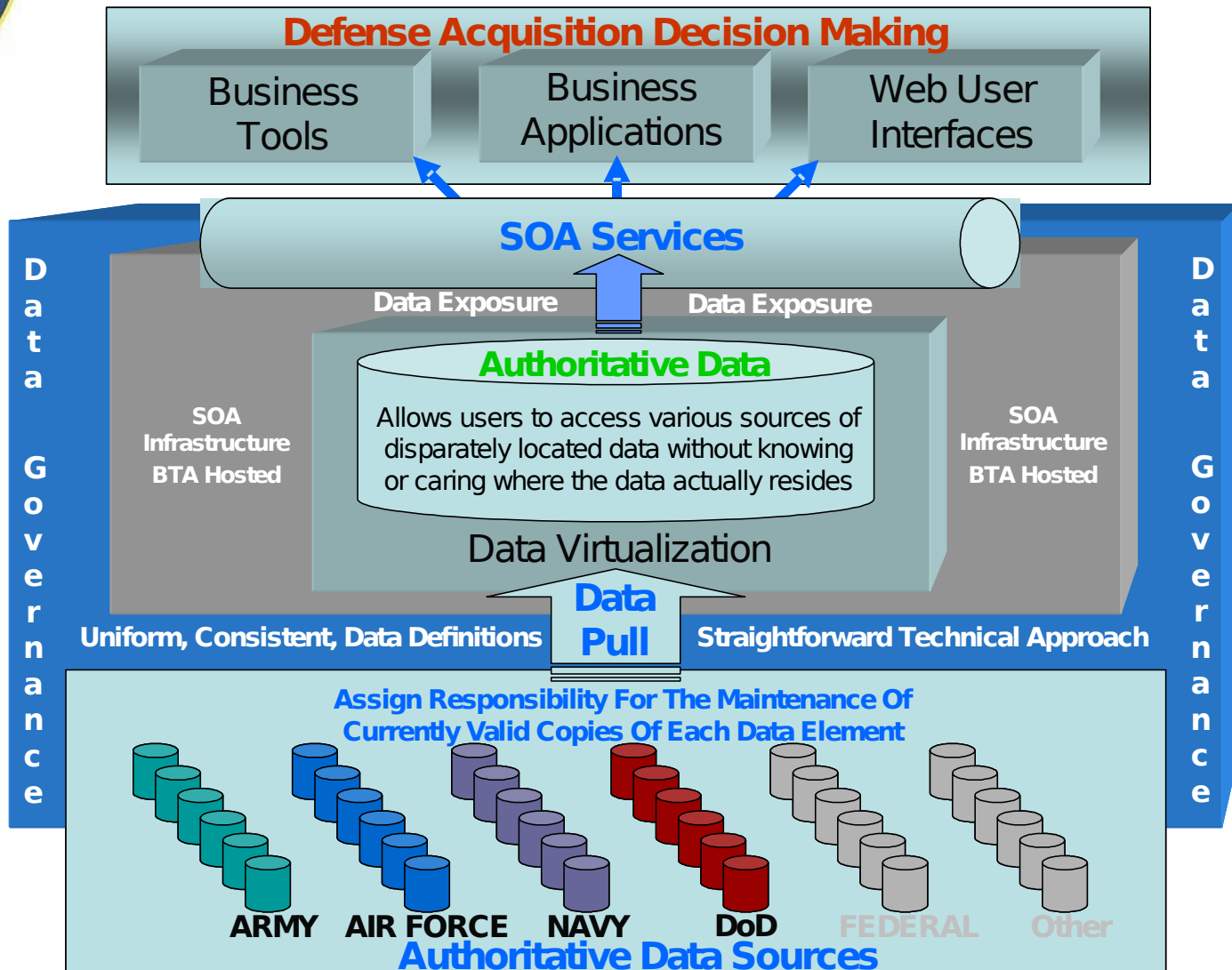
Data Management Transformation



Separating Data From The Systems and Tools



SOA Demo Concept





SOA Governance

► Responsibilities

- Define selected Defense acquisition data elements to be exchanged
- Assign institutional responsibility for maintenance of the authoritative copy of each data element within a system
 - First must establish a policy framework to determine where the authoritative data responsibility should lie
- Establish a standard technical approach for making data available via SOA services

► Governance structure

- **WSLM CBM** to develop functional requirements and develop policy framework
- **AT&L(ARA)** tasked with addressing day-to-day issues that arise
- **AV BEP** team to support and integrate functional requirements and technical approach
- **Business Transformation Agency** to publish a straightforward technical approach and host SOA infrastructure



SOA Demo Elements and Framework

- ▶ Sixty or so common data elements that are already provided to the DAMIR or Kaleidoscope systems
 - Program Performance
 - Cost
 - Schedule
 - ▶ Framework for determining the authoritative source of a data element, based on its inherent properties
 - **State Data:** Unambiguously measurable data; assign responsibility as close to the measurement thereof
 - **Accounting Identities:** Elements that are unambiguously computed from the values of other data elements within a program's purview; these relationships always hold, so not of policy interest
 - **Extrapolation Data :** Data that contains computational extrapolations within a recognized quantitative intellectual framework; assign responsibility to an office that possesses the credentials to perform such work
 - **Goals:** Data that represent a discretionary target that management sets for achievement; assign responsibility to those setting the goal
- (*Multiple sources in many cases)

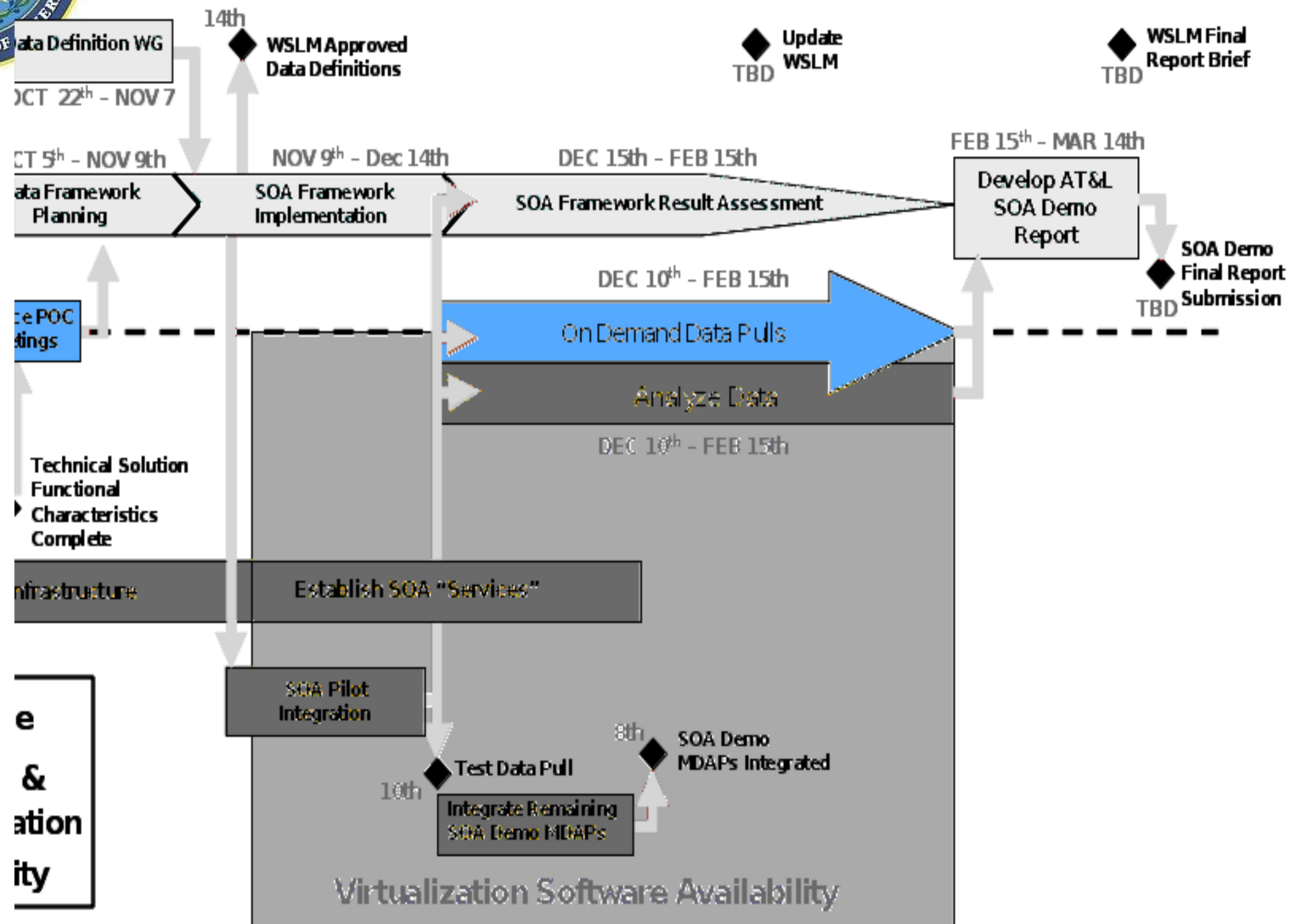


From Service Point of View

- ▶ What will the AT&L SOA Demo entail?
 - Participate in WSLM SOA governance mechanism
 - Two types of data:
 - Identify a authoritative “pull” source for “state” elements
 - For “extrapolated” elements, identify a “pull” source in Service that develops the estimates
 - Assign responsibilities for maintenance in a technical manner consistent with the SOA mechanism
 - Maintain data in the manner provided



SOA Demo Roadmap





Definition of Success

- ▶ Demonstrating Data Governance
 - Define selected Defense acquisition data elements to be exchanged
 - Identification of authoritative sources
 - Assign institutional responsibility for maintenance of the authoritative copy of each data element within a system
- ▶ Demonstrating Data Definition Consistency
 - Availability of data defined as requested by AT&L
 - For the demo, the bar is low: primarily EV- and Nunn-McCurdy-related data
- ▶ Demonstrating Data Access
 - Implementing the SOA infrastructure



The Benefit

► Near-Term

- Demonstrating the utility and applicability (or not) of establishing a managed environment for Defense acquisition data
- Altering the fundamental way in which Defense acquisition data is gathered and distributed

► Potential Long-Term

- Establishing managed authoritative Defense acquisition data sources
- Improving data availability and reliability to decision-makers
- Improving situational awareness of the acquisition status of each of our Major Defense Acquisition Programs (MDAPs)
- Separating the data from business tools and applications
- Reducing burdensome oversight reporting
- Improving Program Management and Oversight efficiencies
- Reducing acquisition cost for future business systems



AT&L SOA Demo

Data and Technical Approach

Presented: DAMIR Conference - October 30 and 31,
2007

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Overview

- ▶ Surveying the Data – Acquisition Data Framework
- ▶ Documenting Key Elements – Business Enterprise Architecture
- ▶ Using the Data – AT&L SOA Demo
 - AT&L SOA Demo Technical Approach
 - SOA Governance Data Element Framework
 - AT&L SOA Demo Data Elements
 - AT&L SOA Demo Displays
 - EV Components
 - Contract Variance
 - Nunn-McCurdy



Documenting Key Acquisition Data Elements - Business Enterprise Architecture

- ▶ The key Acquisition data elements are being documented in the Business Enterprise Architecture (BEA)
 - High-level, generic definitions will appear in the Logical Data Model (OV-7)
 - No other BEA product related to Acquisition Visibility is being modified significantly in BEA 5.0
- ▶ Data categories being addressed in the Logical Data Model
 - Requirements
 - Cost (Total Program Estimates)
 - Funding
 - Program Schedule
 - Contract
 - Performance (Earned Value)
- ▶ BEA 5.0 scheduled to be published in March 2008

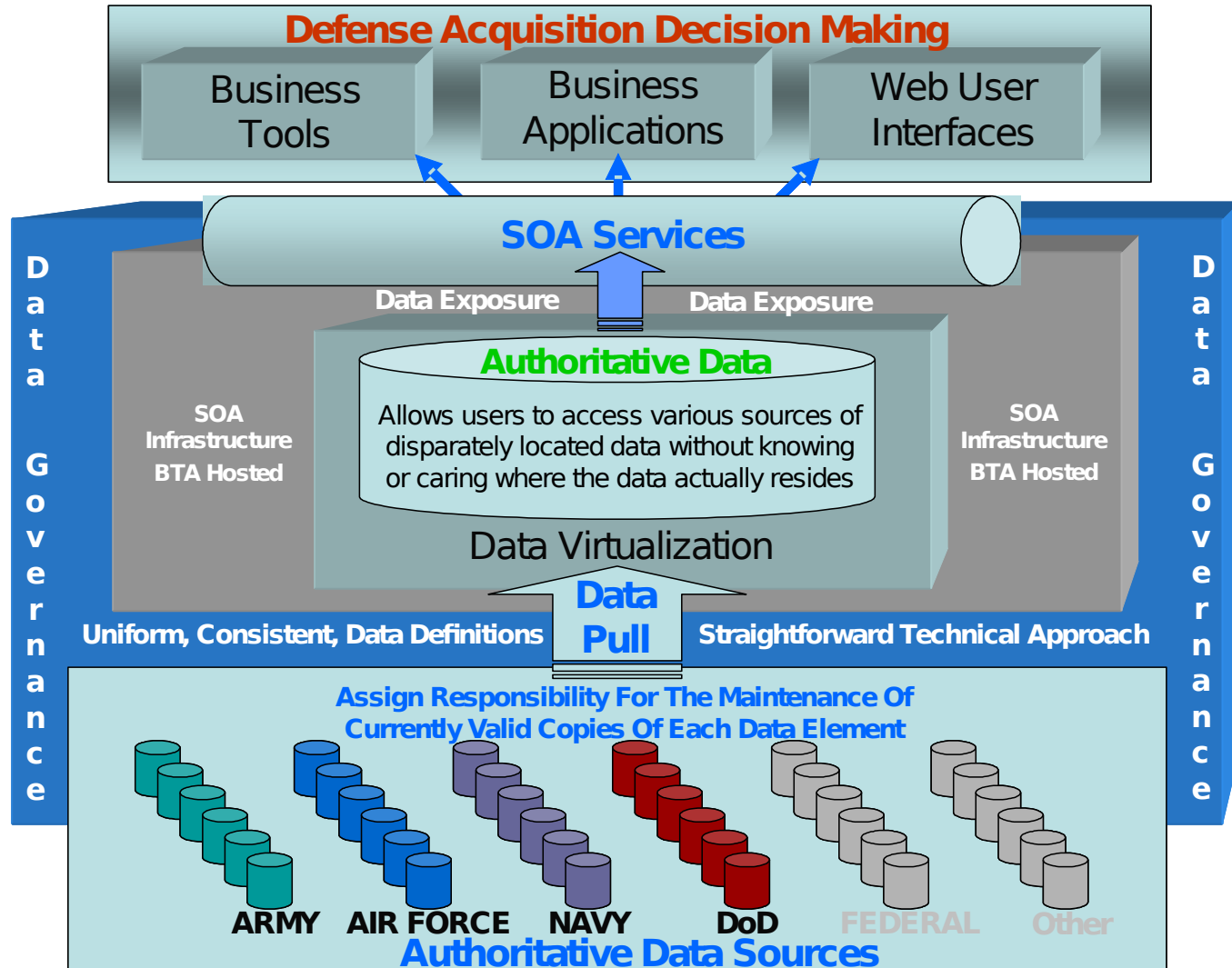


Using the Acquisition Data Framework - AT&L SOA Demo

- ▶ AT&L SOA Demo Technical Approach
- ▶ SOA Governance Data Element Framework
- ▶ AT&L SOA Demo Data Elements
- ▶ SOA Demo Displays
 - EV Components
 - Contract Variance
 - Nunn-McCurdy



AT&L SOA Demo Technical Approach





SOA Governance Data Element Framework

- ▶ Governance framework for determining the authoritative source of a data element, based on its inherent properties
 - **State:** Unambiguously measurable data; assign responsibility as close to the measurement thereof
 - **Accounting Identity:** Elements that are unambiguously computed from the values of other data elements within a program's purview; these relationships always hold, so not of policy interest
 - **Extrapolated:** Data that contains computational extrapolations within a recognized quantitative intellectual framework; assign responsibility to an office that possesses the credentials to perform such work
 - **Goal:** Data that represent a discretionary target that management sets for achievement; assign responsibility to those setting the goal



AT&L SOA Demo Data Elements

- ▶ 61 unique data elements (9 common to all displays)
 - 39 data elements for each Service Program
 - 12 data elements from DAMIR for each Program
 - 10 data elements calculated within the SOA environment
- ▶ Data Classification
 - 42 data elements “state”
 - 9 “extrapolated”
 - 10 “accounting identity” calculated within the SOA environment



AT&L SOA Demo Displays

- ▶ EV Components Display
 - from Kaleidoscope
 - 31 total data elements

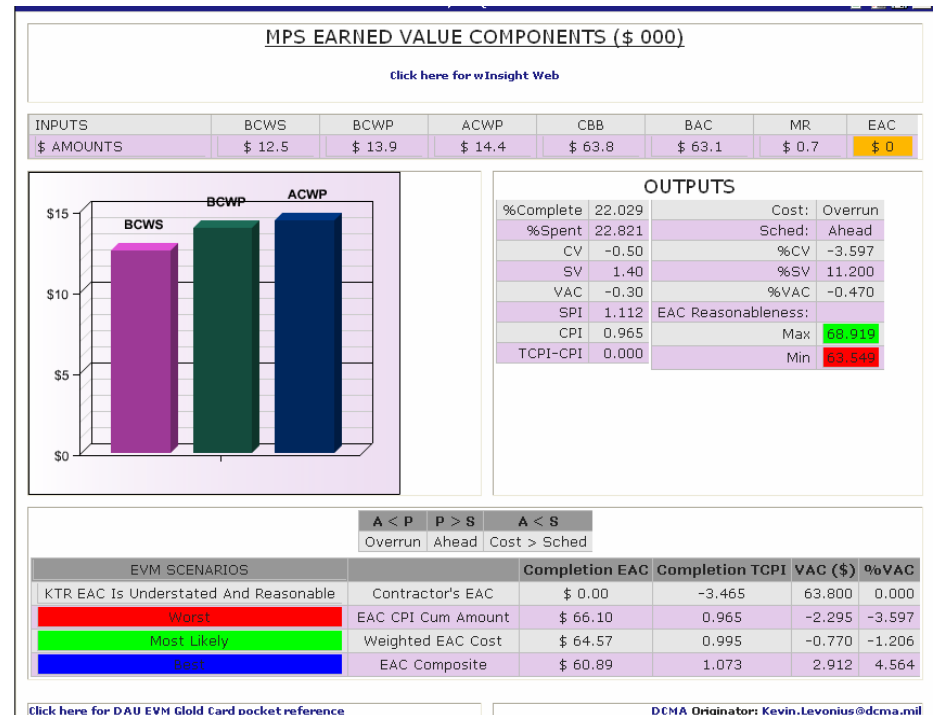
- ▶ Contract Variance Display
 - from DAMIR
 - 24 total data elements

- ▶ Nunn-McCurdy
 - Display to be designed
 - 31 total data elements



EV Components

- ▶ Snapshot data
- ▶ 31 Data elements
 - 9 Program Admin Data
 - 22 Contract / EV Data
- ▶ Data properties
 - 19 “State” data (EV)
 - 6 “Extrapolated” (EV)
 - 6 “Accounting Identity”





Contract Variance

► Historical Data

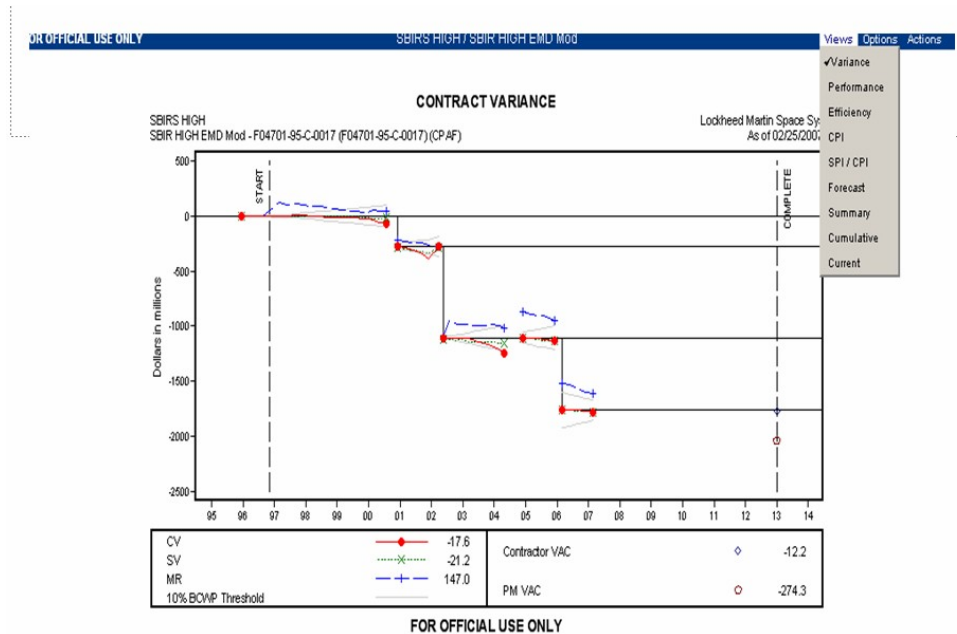
- From authoritative sources

► 24 Data elements

- 9 Program Admin Data
- 15 Contract/EV Data

► Data properties

- 19 “State” data
- 3 “Extrapolated: data (EV)”
- 2 “Accounting identity”





Nunn-McCurdy

- ▶ Snapshot or Historical data
- ▶ 31 Data elements
 - 9 Program Admin Data
 - 22 Program Data
- ▶ Data properties
 - 27 "State" data
 - 4 "Accounting identity"

Display under
construction



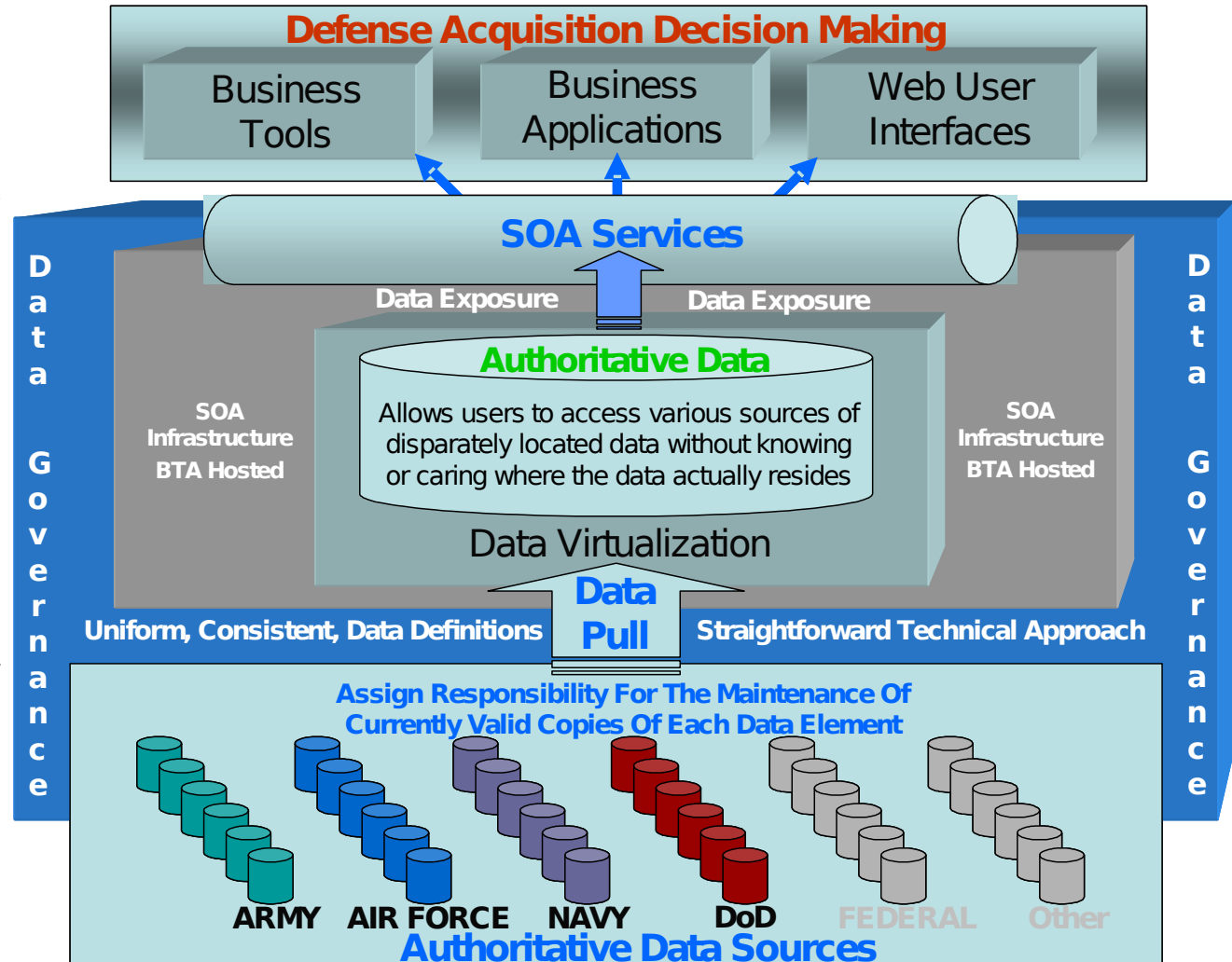
AT&L SOA Demo Technical Approach

4. Access
Authoritative
Data using
Various Tools

1. Identify host

2. Install and
Configure
software

3. Integrate
SOA
Software
with
Services
Systems





Backup



EV Components - Data Elements

| | | |
|---------------------|---|--|
| State | Program Name | |
| State | PNO | |
| State | FY (Fiscal Year) | |
| State | Department Code | |
| State | Main Account | |
| State | BA (Budget Activity) | |
| State | PE (Program Element) | |
| State | PLI (Procurement Line Item) | |
| State | Project Code | |
| State | Contract Number | |
| State | ACWP (Actual Cost of Work Performed) | |
| State | BAC - Contractor (Budget At Completion) | |
| State | BCWP (Budgeted Cost of Work Performed) | |
| State | BCWS (Budgeted Cost of Work Scheduled) | |
| State | CBB (Contract Budget Base) | |
| State | EAC - Contractor (Estimate At Completion) | |
| State | EAC - Contractor Best Case | |
| State | EAC - Contractor Worst Case | |
| State | MR (Management Reserve) | |
| Extrapolated | VAC (Variance At Completion) | $VAC = BAC - EAC$ |
| Extrapolated | % VAC | $\% VAC = (VAC / BAC) * 100$ |
| Extrapolated | PM VAC | $PM VAC = PM BAC - PM EAC$ |
| Extrapolated | TCPI (To Complete Performance Index) | $TCPI = (BAC - BCWP_{cum}) / (EAC - ACWP_{cum})$ |
| Extrapolated | TCPI - CPI | $TCPI - CPI$ |
| Extrapolated | % Schedule | $\% Schedule = (BCWS_{cum} / BAC) * 100$ |
| Extrapolated | % Complete | $\% Complete = (BCWP_{cum} / BAC) * 100$ |
| Accounting Identity | CPI (Cost Performance Index) | $CPI = BCWP_{cum} / ACWP_{cum}$ |
| Accounting Identity | SPI (Schedule Performance Index) | $SPI = BCWP_{cum} / BCWS_{cum}$ |
| Accounting Identity | CV (Cost Variance) | $CV = BCWP_{cum} - ACWP_{cum}$ |
| Accounting Identity | % CV | $\% CV = (CV / BCWP_{cum}) * 100$ |
| Accounting Identity | SV (Schedule Variance) | $SV = BCWP_{cum} - BCWS_{cum}$ |
| Accounting Identity | % SV | $\% SV = (SV / BCWS_{cum}) * 100$ |



Contract Variance - Data Elements

| | | |
|---------------------|--|--------------------------------|
| State | Program Name | |
| State | PNO | |
| State | FY (Fiscal Year) | |
| State | Department Code | |
| State | Main Account | |
| State | BA (Budget Activity) | |
| State | PE (Program Element) | |
| State | PLI (Procurement Line Item) | |
| State | Project Code | |
| State | Contract Number | |
| State | Contract Modification | |
| State | Contractor Name | |
| State | Contract Start | |
| State | Contract Completion Date | |
| State | Report Date | |
| State | ACWP (Actual Cost of Work Performed) | |
| Extrapolated | BAC - PM | |
| State | BCWP (Budgeted Cost of Work Performed) | |
| State | BCWS (Budgeted Cost of Work Scheduled) | |
| Extrapolated | EAC - PM | |
| State | MR (Management Reserve) | |
| Extrapolated | PM VAC | $PM\ VAC = PM\ BAC - PM\ EAC$ |
| Accounting Identity | CV (Cost Variance) | $CV = BCWP_{cum} - ACWP_{cum}$ |
| Accounting Identity | SV (Schedule Variance) | $SV = BCWP_{cum} - BCWS_{cum}$ |



Nunn-McCurdy - Data Elements

| | | |
|---------------------|---|--|
| State | Program Name | |
| State | PNO | |
| State | FY (Fiscal Year) | |
| State | Department Code | |
| State | Main Account | |
| State | BA (Budget Activity) | |
| State | PE (Program Element) | |
| State | PLI (Procurement Line Item) | |
| State | Project Code | |
| State | Total RDT&E Cost (TY \$) | |
| State | Total Procurement Cost (TY \$) | |
| State | Total MILCON Cost (TY \$) | |
| State | Total O&M Cost (TY \$) | |
| State | Total RDT&E Quantity | |
| State | Total Procurement Quantity | |
| State | Original Baseline (APB): Total RDT&E Cost | |
| State | Original Baseline (APB): Total Procurement Cost | |
| State | Original Baseline (APB): Total MILCON Cost | |
| State | Original Baseline (APB): Total O&M Cost | |
| State | Original Baseline (APB): Total RDT&E Quantity | |
| State | Original Baseline (APB): Total Procurement Quantity | |
| State | Current Baseline (APB): Total RDT&E Cost | |
| State | Current Baseline (APB): Total Procurement Cost | |
| State | Current Baseline (APB): Total MILCON Cost | |
| State | Current Baseline (APB): Total O&M Cost | |
| State | Current Baseline (APB): Total RDT&E Quantity | |
| State | Current Baseline (APB): Total Procurement Quantity | |
| Accounting Identity | Total Program Cost (in TY \$ for PAUC/APUC) | Sum of RDT&E, Procurement, & MILCON |
| Accounting Identity | Total Program Quantity (in TY \$ for PAUC/APUC) | Sum of RDT&E & Procurement Quantities |
| Accounting Identity | PAUC | $PAUC = (Total\ Program\ Cost) / Total\ Program$ |
| Accounting Identity | APUC | $APUC = (Procurement\ Cost / Procurement\ Qty)$ |